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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/808,688	03/25/2004	Yuichi Gomi	OOCL-154 (6HS-04S0274)	6066

26479 7590 02/21/2008

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EXAMINER	
WANG, KENT F	

ART UNIT	PAPER NUMBER
2622	

MAIL DATE	DELIVERY MODE
02/21/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/808,688	GOMI ET AL.	
	Examiner	Art Unit	
	Kent Wang	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 November 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendments, filed on 11/30/2007, have been entered and made of record. Claims 1-18 are pending.

Response to Arguments

2. Applicant's arguments with respect to claims 1-17 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-9, 13, and 18 are rejected under 35 U.S.C. § 102(b) as being anticipated by Kinoshita, US 4,887,160.

Regarding claim 1, Kinoshita discloses a solid-state image sensing apparatus (a image pickup device 5, Fig 1) having a plurality of output channels (OUT1, OUT2, OUT3, and OUT4, Fig 2), wherein a first driving mode (first readout means) and a second driving mode (second readout means) in which pixel signals of pixels in the same image sensing area are read out can freely be set (the switching circuit 14 selects between first readout meads and second readout means, col. 6, lines 11-24), and control is executed to change the number of output channels to be used between the first driving mode and the second driving mode (the switching circuit 14 selects

each of the outputs OUT1, OUT2 and OUT3 in sequence in response to the switching pulses SW1, SW2 and SW3 and provides an output OUT4 to change the number of output channels to be used between the first read-out means and the second readout means) (col. 6, lines 11-24, col. 7, lines19-26, and Figs 2-4).

Regarding claim 2, Kinoshita discloses the first driving mode (first readout mode), a phase of a read timing of pixel signals of pixels adjacent in a horizontal direction is shifted by a predetermined amount (the outputs OUT1, OUT2, and OUT3 have a predetermined 120^{O} phase difference from each other) (col. 5, line 63 to col. 6, line 10).

Regarding claim 3, Kinoshita discloses the first driving mode (first readout means), signals of two pixels adjacent in a horizontal direction are output in parallel from two output channels (OUT1 and OUT2), and in the second driving mode (second readout means), signals of pixels adjacent in the horizontal direction and a vertical direction are output in parallel from four output channels (image pickup pixel array 1 are outputted as the outputs OUT1, OUT2, OUT3, and OUT4) (col. 7, lines 29-57), respectively.

Regarding claim 4, Kinoshita discloses a solid-state image sensing apparatus (a image pickup device 5, Fig 1) having color filters with a predetermined array and a plurality of output channels (on the matrix array of the cells, there is provided a color filter arrangement having different color filter strip portions R, G, and B corresponding to each output channel), wherein pixel signals of pixels in the same color phase of color phase codings defined by the color filters are output in parallel from the same output channels (the pixel array produces three outputs OUT1, OUT2

and OUT3 corresponding to red, green and blue colors, respectively and these outputs are filtered at the low-pass filters to produce same color component from the same output channels) while changing the number of output channels (number of output pixels can be changed by the switching circuit 14) (col. 5, line 63 to col. 6, line 24).

Regarding claim 5, Kinoshita discloses a solid-state image sensing apparatus having color filters with a predetermined array, a plurality of output channels, and registers (on the matrix array of the cells, there is provided a color filter arrangement having different color filter corresponding to each output channel and shift registers 2, 3, and 4 for readout the charges from the respective groups of the cell) (col. 5, lines 27-36 and col. 5, line 63 to col. 6, line 10),

wherein the X-address register and the Y-address register are controlled so as to, for pixels in one of an entire image sensing area and a block area (shift registers 2, 3, and 4 could readout the charges from the respective groups of the cell), parallelly read out pixel signals of pixels having the same color relationship in color phase codings defined by the color filters continuously (the pixel array produces three outputs OUT1, OUT2 and OUT3 corresponding to red, green and blue colors, respectively and these outputs are filtered at the low-pass filters to produce same color component from the same output channels) while changing the number of output channels (number of output pixels can be changed by the switching circuit 14) (col. 5, lines 27-36 and col. 5, line 63 to col. 6, line 24).

Regarding claim 6, Kinoshita discloses a solid-state image sensing apparatus (a image pickup device 5, Fig 1) having four output channels (OUT1, OUT2, OUT3, and OUT4, Fig 2), wherein one of two-system parallel outputs for a pair of colors,

which uses two of the output channels (first readout means), and single-color four-system parallel outputs using the four output channels is set (second readout means), and control is executed to read out pixel signals of pixels in an arbitrary area of an entire image sensing range continuously (shift registers 2, 3, and 4 could readout the charges from the respective groups of the cell) in a predetermined direction while changing the number of output channels (number of output pixels can be changed by the switching circuit 14) (col. 5, lines 27-36 and col. 5, line 63 to col. 6, line 24).

Regarding claim 7, Kinoshita discloses the read timings of the pixel signals output in parallel from said plurality of output channels have a phase shift for at least one pair of different chrominance signals (the outputs channels have a predetermined 120^{O} phase difference from each other and the different color signals can be obtained separately through the first read-out means and the dot seriated signal for the high range luminance component can be obtained through the second read-out means) (col. 5, line 63 to col. 6, line 24 and col. 2, lines 34-38).

Regarding claims 8 and 9, these claims recite same limitations as claim 7. Thus they are analyzed and rejected as previously discussed with respect to claim 7 above.

Regarding claim 13, this claim differs from claim 1 only in that the claim 1 is an apparatus claim whereas claim 13 is a method. Thus the method claim 13 is analyzed and rejected as previously discussed with respected to claim 1 above.

Regarding claim 18, Kinoshita discloses a solid-state image sensing apparatus comprising:

- an image sensing area (a image part 1, Fig 1);
- a plurality of output channels (OUT1, OUT2, OUT3, and OUT4, Fig 2);

- a first driving mode (first readout means) for reading pixel signals of pixels in the image sensing area wherein the first driving mode selects a first set of output channels (the first readout means includes plural signal read-out channels respectively corresponding to the cell groups) (col. 2, lines 18-33);
- a second driving mode (second readout means) for reading pixel signals of pixels in the image sensing area wherein the second driving mode selects a second set of output channels (second readout means can be arranged to sequentially select the signals read out through the read-out channels) (col. 2, lines 18-33);
- a control circuit (a the switching circuit 14, Fig 2) which sets one of the first driving mode (first readout means) and the second driving mode (second readout means) based on an externally input control signal, wherein the input control signal may be freely set (the switching circuit 14 can select between first readout meads and second readout means and the selecting circuit may further include switches having one common output and individual inputs respectively connected to the outputs of the read-out channels) (col. 14, line 52 to col. 15, line 11),
- wherein the number of output channels in the first set (first readout means) is different from the number of output channels in the second set (second readout means) (col. 7, lines 19-26)

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 10-12 and 14-17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kinoshita in view of Yoneda (US 6,952,228).

Regarding claim 10, the limitations of claim 4 are taught above, Kinoshita does not specifically teach the color filters having a Bayer matrix. However Yoneda discloses the color filters having a Bayer matrix (a color filter arrangement of a primary color Bayer) (col. 11, lines 64-67).

Thus it would have been obvious to one of ordinary skill in the art to include the Bayer matrix as taught by Yoneda into Kinoshita's image sensor, as the advantages of Bayer matrix are well known to the skilled person as it used twice as many green elements as red or blue to mimic the human eye's greater resolving power with green light and further it can be used to reduce the amplification of the artifacts caused by the CFA interpolation.

Regarding claims 11 and 12, these claims recite same limitations as claim 10. Thus they are analyzed and rejected as previously discussed with respect to claim 10 above.

Regarding claim 14, this claim differs from claim 1 only in that the claim 14 claims that the apparatus further comprising the memories which store pixel signals transferred from the pixels through the transfer switches, a photoelectric conversion unit, and a vertical scanning circuit which selects pixels of the photoelectric

conversion unit. Kinoshita discloses a memory which store pixel signals transferred from the pixels through the transfer switches (a storage part for temporality storing the charges generated at the image pickup part for reading out) (col. 5, lines 37-42).

Kinoshita does not disclose the solid-state image sensing apparatus comprising a photoelectric conversion unit, a vertical scanning circuit and a transfer switch.

Yoneda discloses the solid-state image sensing apparatus comprising:

- a photoelectric conversion unit (photoelectric conversion elements) in which a plurality of pixels are two-dimensionally arrayed (col. 9, lines 24-42, Yoneda);
- a vertical scanning circuit (vertical shift register 906a, 906b, Fig 4) which selects pixels of the photoelectric conversion unit (col. 4, line 23 to col. 5, line 2, Yoneda); and
- transfer switches (transfer switches 922, Fig 5) each of which is arranged at one of one end and other end of a corresponding one of output signal lines running from the pixels and driven and controlled by a transfer signal which is commonly input to alternate columns (col. 5, lines 11-22, Yoneda);

It would have been obvious to a person of the ordinary skill in the art to use Yoneda's vertical scanning circuit, transfer switches, and photoelectric conversion unit, in Kinoshita's image pickup device in order to reduce a lag of time for accumulating photocharges among image pickup areas and thus obtain an image with less shading (col. 2, lines 38-43, Yoneda).

Regarding claim 15, the limitations of claim 14 are taught above, Kinoshita discloses the first driving mode (first readout mode), a phase of a read timing of pixel signals of pixels adjacent in a horizontal direction is shifted by a predetermined amount (the outputs OUT1, OUT2, and OUT3 have a predetermined 120^{O} phase difference from each other) (col. 5, line 63 to col. 6, line 10).

Regarding claim 16, this claim differs from claim 14 only in that the claim 16 claims that the apparatus further comprising the color filters having a Bayer matrix. Kinoshita does not disclose the image pickup device comprising the color filters having a Bayer matrix. Yoneda discloses the color filters having a Bayer matrix.

Thus it would have been obvious to one of ordinary skill in the art to include the Bayer matrix as taught by Yoneda into Kinoshita's image pickup device, as the advantages of Bayer matrix are well known to the skilled person as it used twice as many green elements as red or blue to mimic the human eye's greater resolving power with green light and further it can be used to reduce the amplification of the artifacts caused by the CFA interpolation.

Regarding claim 17, the limitations of claim 16 are taught above, Kinoshita discloses one of two-system parallel outputs for a pair of colors, which uses two of the output channels (first readout means), and single-color four-system parallel outputs using the four output channels is set (second readout means), and control is executed to read out pixel signals of pixels in an arbitrary area of an entire image sensing range continuously in a predetermined direction (shift registers 2, 3, and 4 could readout the charges from the respective groups of the cell) (col. 5, lines 27-36).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Nakagawa et al. (US 4,827,345), Hashimoto et al. (US 4,816,910), Ohzu et al. (US 2002/0167601), Umeda et al. (US 7,012,635), Lee et al. (US 6,466,265), Bandera et al (US 7,106,374), Egawa et al. (US 7,292,276), Tamagawa (US 7,298,403).

Inquiries

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kent Wang whose telephone number is 571-270-1703. The examiner can normally be reached on 8:00 A.M. - 5:30 PM (every other Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc Yen Vu can be reached on 571-272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-270-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://portal.uspto.gov/external/portal/pair. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service

Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KW
11 February 2008

NGOC-YEN VU
SUPERVISORY PATENT EXAMINER